Claims

1. Peptide or peptide derivative comprising:

   (a) the amino acid sequence (I)
   D-V-N-Y-A-F-L-H-A-T-D-L-L-P-A-C-D-G-E-R,

   (b) the amino acid sequence (II)
   S-N-M-Y-A-M-M-I-A-R-F-K-M-F-P-E-V-K-E-K,

   (c) the amino acid sequence (III)
   N-W-E-L-A-D-Q-P-Q-N-L-E-E-I-L-M-H-C-Q-T,

   (d) the amino acid sequence (IV)
   T-L-K-Y-A-I-K-T-G-H-P-R-Y-F-N-Q-L-S-T-G,

   (e) the amino acid sequence (V)
   P-R-Y-F-N-Q-L-S-T-G-L-D-M-V-G-L-A-A-D-W,

   (f) the amino acid sequence (VI)
   T-Y-E-I-A-P-V-F-V-L-L-E-Y-V-T-L-K-K-M-R,

   (g) Amino acid sequence (VII)
   F-F-R-M-V-I-S-N-P-A-A-T-H-Q-D-I-D-F-L-I,

   (h) partial regions of the amino acid sequence
   shown in (a), (b), (c), (d), (e), (f) or/and
   (g) with a length of at least 6 amino acids
   or/and

(i)   amino acid sequences which have an essentially
       equivalent specificity or/and affinity of
       binding to MHC molecules as the amino acid
       sequences shown in (a), (b), (c), (d), (e),
       (f), (g) or/and (h).

2.   Peptide or peptide derivative as claimed in
      claim 1,
      wherein
      it has at least a length of eight amino acids.

3.   Peptide or peptide derivative as claimed in claim 1
      or 2,
      wherein
      it has at least a length of 10 amino acids.

4.   Peptide or peptide derivative as claimed in one of
      the claims 1 to 3,
      wherein
      it has a length of up to 25 amino acids.

5.   Peptide or peptide derivative as claimed in one of
      the claims 1 to 4,
      wherein
      it carries a marker group.

6.   Peptide mimetic,
      wherein
      it has an essentially equivalent specificity or/and
      affinity of binding to MHC molecules as a peptide
      or peptide derivative as claimed in one of the
      claims 1 to 5.

6. Complex which at least comprises a peptide or peptide derivative as claimed in one of the claims 1 to 5 or a peptide mimetic as a peptide or peptide derivative as claimed in one of the claims 1 to 5.

7. Complex which at least comprises a peptide or peptide derivative as claimed in one of the claims 1 to 5 or a peptide mimetic as claimed in claim 6 which is bound to a MHC molecule or a peptide-binding derivative of a MHC molecule.

8. Complex as claimed in claim 7,
wherein
it comprises a MHC class II molecule or a peptide-binding derivative thereof.

9. Complex as claimed in claim 8,
wherein
it has a MHC class II molecules of types DR1, DR2, DR4 or DQ6.

10. Complex as claimed in claim 9,
wherein
the MHC class II molecule has the subtype
DR B1*101, DR B1*1501, DR B1*1502, DR B1*1601,
DR B5*0101, DR B1*0401 or DQ B1*0602.

11. Complex as claimed in one of the claims 7 to 10,
wherein
it comprises a recombinant MHC molecule or a peptide-binding derivative thereof.

12. Complex as claimed in claim 11,
    wherein
    it comprises a soluble peptide-binding derivative
    of a MHC molecule.

13. Complex as claimed in one of the claims 7 to 12,
    wherein
    it carries a marker group.

14. Complex as claimed in one of the claims 7 to 13,
    wherein
    it at least contains 2 MHC molecules or MHC
    molecule derivatives which are associated by
    covalent or non-covalent interactions.

15. Complex as claimed in claim 24,
    wherein
    it contains peptide MHC molecule complexes that are
    cross-linked by chemical coupling reagents.

16. Complex as claimed in claim 14,
    wherein
    it contains MHC molecules or MHC molecule
    derivatives that are cross-linked with several MHC-
    binding regions via an oligomerized peptide
    component.

17. Complex as claimed in claim 14,
    wherein
    it contains peptide-MHC molecule complexes that are
    cross-linked by antibodies.

18. Pharmaceutical composition,
    wherein
    it contains a peptide or peptide derivative as
    claimed in one of the claims 1 to 5, a peptide
    mimetic as claimed in claim 6 or/and a complex as
    claimed in one of the claims 7 to 17 as the active
    component if desired in combination with common
    pharmaceutical additives.

19. Composition as claimed in claim 18,
    wherein
    it in addition comprises an accessory-stimulating
    component.

20. Composition as claimed in claim 19,
    wherein
    the accessory-stimulating component is selected
    from cytokines or/and the surface antigen B7.

21. Use of a pharmaceutical composition as claimed in
    one of the claims 18 to 20 for the production of an
    agent for the diagnosis of diseases or a
    predisposition for diseases which influence the
    immune system or for the diagnosis of tumour
    diseases or a predisposition of tumour diseases.

22. Use as claimed in claim 21 for the production of an
    agent for the diagnosis of autoimmune diseases or a
    predisposition of autoimmune diseases.

23. Use as claimed in claim 21 or 22 for the production
    of an agent for the diagnosis of diabetes or a
    predisposition of diabetes.

24. Method for the determination of a specific T cell subpopulation,
    wherein
    a sample containing T cells is contacted with a peptide or peptide derivative as claimed in one of the claims 1 to 5, a peptide mimetic as claimed in claim 6 or/and a complex as claimed·in one of the claims 7 to 17 and the reaction of T cells with the peptide or complex is determined in the sample.

25. Method as claimed in claim 24,
    wherein
    the reaction of the T cells with a fluorescent-labelled peptide or complex is determined by FACS analysis.

26. Method as claimed in claims 24 or 25,
    wherein
    preactivated T cells are selected before or/and after contacting the T cells with the peptide or the complex.

27. Use of a pharmaceutical composition as claimed in one of the claims 18 to 20 for the production of an agent for therapy or prevention of diseases which influence the immune system.

28. Use as claimed in claim 27 for the production of an agent for the therapy or prevention of autoimmune diseases.

29. Use as claimed in claim 27 or 28 for the production of an agent for the therapy or prevention of diabetes.

30. Use of a peptide or peptide derivative as claimed
in one of the claims 1 to 5, a peptide mimetic as
claims in claim 6 or a complex as claimed in one of
the claims 7 to 17 for the production of an antigen
in particular an immunogen or tolerogen.

31. Method for the isolation of a specific T cell
subpopulation,
wherein
a sample containing T cells is contacted with a
peptide or peptide derivative as claimed in one of
the claims 2 to 5, a peptide mimetic as claimed in
claim 6 or a complex as claimed in one of the
claims 7 to 17, the T cells that react with the
peptide or complex are identified and separated
from other T cells if desired.

32. Method as claimed in claim 31,
wherein
preactivated T cells are selected before or/and
after contacting the T cells with the peptide or
the complex.

33. Use of T cells isolated according to the method as
claimed in claim 31 or partial structures thereof
for the production of an antigen.

34. Use as claimed in claim 33,
wherein
the T cells or partial structures thereof are re-
injected into the patients from whom they are
originally derived.

35. Use as claimed in claim 34,
    wherein
    inactivated T cells are reinjected.

36. Use as claimed in claim 35,
    wherein
    T cells capable of division are reinjected.

37. Antibody against a peptide or peptide derivative as
    claimed in one of the claims 1 to 5, a peptide
    mimetic as claimed in claim 6 or a complex as
    claimed in one of the claims 7 to 17, obtainable by
    immunization with a peptide, peptide derivative,
    peptide mimetic or complex and isolating an
    antibody produced by the immunization.

38. Anti-idiotypic antibody against an antibody as
    claimed in claim 37, obtainable by immunizing the
    antibody against the peptide, peptide derivative or
    peptide mimetic or the complex and isolating an
    anti-idiotypic antibody produced by the
    immunization.

39. T cell which reacts with a peptide or peptide
    derivative as claimed in one of the claims 1 to 3,
    a peptide mimetic as claimed in claim 6 or a
    comples as claimed in one of the claims 7 to 17.

40. Use of peptides of glutamic acid decarboxylase (GAD)
    peptide derivatives derived therefrom or peptide
    mimetics for the production of a pharmaceutical
    agent which leads to the formation of an immune
    tolerance when administered to patients with
    diabetes.

41. Use as claimed in claim 40,
    wherein
    the peptides, peptide derivatives or peptide
    mimetics are administered at a dose of 3 to 30 mg
    per kg body weight.

42. Use as claimed in claims 40 or 41,
    wherein
    at least a second vaccination is carried out after
    administration of the peptides, peptide derivatives
    or peptide mimetics.

43. Use as claimed in one of the claims 40 to 42,
    wherein
    in the second or optionally following vaccinations
    peptides, peptide derivatives or peptide mimetic
    complete GAD or/and a part thereof containing the
    sequence of the peptides which have already been
    used in the first vaccination are used.

44. Use as claimed in claim 43,
    wherein
    the vaccinations are carried out each at intervals
    of 7 to 14 days.

45. Use as claimed in one of the claims 40 to 44,
    wherein
    a mixture of various peptides, peptide derivatives
    or peptide mimetic is used.

46. T cell,

    wherein

    it contains a T cell receptor which binds to a
    peptide or peptide derivative as claimed in one of
    the claims 1 to 5, to a peptide mimetic as claimed
    in claim 6 or to a complex as claimed in one of the
    claims 7 to 17.

47. T cell as claimed in claim 46,

    wherein

    it has a T cell receptor which comprises a TCRα
    chain containing a CDR3 region shown in fig. 5 or
    one that is at least 70 % homologous thereto or/and
    a TCRβ chain containing a CDR3 region shown in fig.
    6 or one that is at least 70 % homologous thereto.

48. Polypeptide with T cell receptor activity,

    wherein

    it binds to a peptide or peptide derivative as
    claimed in one of the claims 1 to 5, to a peptide
    mimetic as claimed in claim 6 or to a complex as
    claimed in one of the claims 7 to 17.

49. Polypeptide as claimed in claim 48,

    wherein

    it comprises a TCRα chain containing a CDR3 region
    shown in fig. 5 or an amino acid sequence that is
    at least 70 % homologous thereto.

50. Polypeptide as claimed in claim 48 or 49,

    wherein

    it comprises a TCRβ chain containing a CDR3 region
    shown in fig. 6 or an amino acid sequence that is
    at least 70 % homologous thereto.

51. Nucleic acid,
    wherein
    it codes for a polypeptide as claimed in one of the
    claims 48 to 50.